COLD WEATHER INJURY PREVENTION IN IRAQ

Presenter's Name
Presenter's Command
Local Contact Information

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Introduction

Prevention of cold injuries is a Command and Individual Responsibility

ALL COLD WEATHER INJURIES ARE PREVENTABLE!!!

Outline

- Introduction
- Winter in Iraq
- Susceptibility Factors for Cold Weather Injuries
- Cold Weather Injuries
  - description
  - treatment
  - Prevention
- Cold Weather Injury Prevention
- Conclusion

Iraq

MOSUL
KIRKUK
BAGHDAD
AR RUTBAH
AL AMARAH
AN-NAJAF
BASRA
www.globalsupport.co.uk

Winters in Iraq

- Winter season from November – March
- Rainy season
- Snowfall is most likely in the mountains but is possible anywhere in Iraq
- Temperatures are generally mild except in the high mountains
- Flooding of rivers.

Winters in Iraq

Annual Temperature ranges (C°)

REGION	WINTER		
	MIN	MAX	MIN
West/South Desert	9°	16°	-14°
Rolling Upland	3°	13°	-12°
rates Delta	4°	18°	-7°
Mountains	-4°	5°	-30°

Winters in Iraq

Risks Due to Cold Weather

- Hypothermia (most likely in the mountains)
- Frostbite (in the mountains)
- Chilblains
- Trench foot (most likely during flooding)
- Dehydration
- Carbon Monoxide poisoning
- Snow Blindness
- Sunburn

Susceptibility Factors

Typical Victim of a Cold Weather Injury

- Male
- E-4 or below
- Approximately 20 years old
- From a warm climate
- Fewer than 18 months time in service
- Uses tobacco/nicotine, alcohol or medications
- Neglects proper foot care

Susceptibility Factors

- Previous cold weather injury
- Inadequate nutrition
- Alcohol, nicotine use
- Dehydration
- Overactivity (sweating)
- Underactivity
- Long exposure to the cold
- Sick or injured
- Ethnic/geographic origin
- Age
- Poor physical condition
- Little experience/training in cold weather
- Poor clothing and equipment

Susceptibility Factors

- Contributing weather factors
  - Ambient temperature
  - Wind velocity
  - Wet or damp conditions
  - Altitude (low oxygen)

Hypothermia

- Severe body heat loss-body temp falls below 95°F
- MEDICAL EMERGENCY; life threatening condition.
- Occurs when:
  - conditions are windy, clothing is wet, and/or the individual is inactive
  - extended water exposure or immersion
    - 1 hour or less when water temp is below 45°F
    - prolonged exposure in slightly cool water (e.g. 60°F)
    - thunderstorms, hail, rain and accompanying winds

Hypothermia

The “umbles”-stumbles, mumbles, fumbles, and grumbles

- Initial Symptoms
  - shivering
  - dizzy, drowsy
  - withdrawn behavior
  - irritability
  - confusion
  - slowed, slurred speech
  - altered vision
  - stumbling
- Severe Stages
  - stops shivering
  - desire to lie down and sleep
  - heartbeat and breathing is faint or undetectable
  - unconsciousness followed by DEATH

Hypothermia

- Treatment
  - prevent further cold exposure
  - evacuate immediately if severe hypothermia
  - remove wet clothing
  - rewarm in dry clothing, blankets or sleeping bag
    - Place another person in a sleeping bag as an additional heat source
  - warm, sweet liquids if conscious
  - minimize handling of the unconscious victim with a low heartbeat so as to not induce a heart attack.

Hypothermia

- Prevention
  - eat properly and often
  - warm liquids and water
  - wear uniform properly (layers worn loosely)
  - keep active
  - stay dry
  - warming tents
  - get plenty of rest
  - buddy watch/observation/NCO checks

Hypothermia

Frostbite

- The freezing of body tissues.
- Occurs at air temps below 32°F
  - skin freezes at 28°F
- Superficial frostbite (mild)
  - freezing of skin surface
- Deep frostbite (severe)
  - freezing of skin and flesh, may include bone
- Hands, fingers, feet, toes, ears, chin, nose, groin area

Frostbite

- Symptoms
  - initially redness in light skin or grayish in dark skin
  - tingling, stinging sensation
  - turns numb, yellowish, waxy or gray color
  - feels cold, stiff, woody
  - blisters may develop

Frostbite

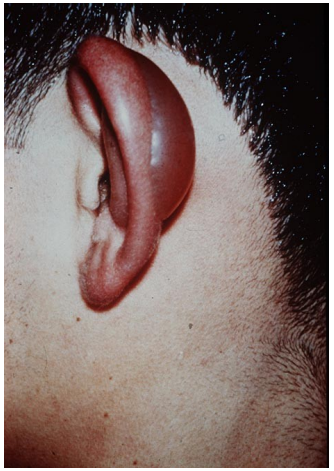
- Treatment
  - remove from cold and prevent further heat loss
  - remove constricting clothing and jewelry
  - rewarm affected area evenly with body heat until pain returns
    - when skin thaws it hurts!!
    - do not rewarm a frostbite injury if it could refreeze during evacuation or if victim must walk for medical treatment
  - do not massage affected parts or rub with snow
  - evacuate for medical treatment

Frostbite

- Prevention
  - wear uniform properly (layers and loosely)
  - keep socks and clothing dry (use poly pro/thermax liner socks and foot powder/ change insoles also)
  - protect yourself from wind
  - keep face and ears covered and dry
  - drink hot fluids and eat often
  - keep active
  - insulate yourself from the ground (sleeping pad/tree branches etc…)
  - “Buddy System”
  - caution skin contact with super-cooled metals or fuel
  - Use approved gloves to handle fuel and POL
  - seek medical aid for all suspected cases

Frostbite

2nd degree Frostbite

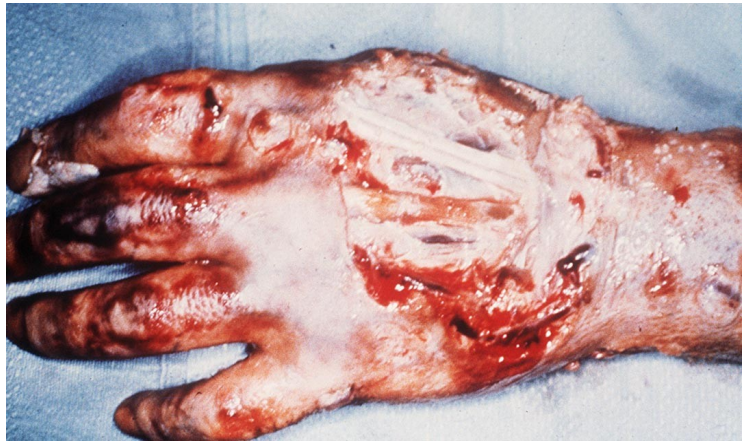


Frostbite

3rd degree Frostbite

Frostbite

4th degree Frostbite



Chilblains

- Cold injury where skin is inflamed. Tissue not frozen.
- Cold, wet conditions (between 32-60°F, high humidity)
- Repeated, prolonged exposure of bare skin
- Can develop in only a few hours
- Ears, nose, cheeks, hands and feet

Chilblains

- Symptoms:
  - initially pale and colorless
  - worsens to achy, prickly sensation then numbness
  - red, swollen, hot, itchy, tender skin upon rewarming
  - blistering in severe cases

Chilblains

- Treatment
  - prevent further exposure
  - wash, dry gently
  - rewarm (apply body heat)
  - don’t massage or rub
  - dry sterile dressing
  - seek medical aid

Chilblains

- Prevention
  - keep dry and warm
  - cover exposed skin
  - wear uniform properly
  - Don’t Smoke
  - use the “Buddy System”

Chilblains

(c) University Erlangen,
Department of Dermatology
Phone: (+49) 9131 - 85 - 2727

Trench/Immersion Foot

- Cold injury resulting from prolonged exposure to wet, cold temperatures just above freezing. (temps from 32°F-50°F)
- Tissue not frozen but it is potentially crippling.
- Prolonged exposure of skin to moisture (12 or more hours)
- High risk during wet weather, in wet areas, or sweat accumulated in boots or gloves

Trench/Immersion Foot

- Symptoms
  - initially appears wet, soggy, white, shriveled
  - sensations of pins and needles, tingling, numbness, and then pain
  - skin discoloration - red, bluish, or black
  - becomes cold, swollen, and waxy appearance
  - may develop blisters, open weeping or bleeding
  - in extreme cases, flesh dies

Trench/Immersion Foot

- Treatment
  - prevent further exposure
  - dry carefully
  - DO NOT break blisters, apply lotions, massage, expose to heat, or allow to walk on injury
  - rewarm by exposing to warm air
  - clean and wrap loosely
  - elevate feet to reduce swelling
  - evacuate for medical treatment

Trench/Immersion Foot

- Prevention
  - keep feet clean and dry
  - change socks at least every 8 hours or whenever wet and apply foot powder
  - bring extra boots to field - alternate boots from day to day to allow boots to dry.
  - no blousing bands
  - report all suspected cases to leadership

Trench/Immersion Foot

Dehydration

- A loss of body fluids to the point of slowing or preventing normal body functions
- Increases chance of becoming a cold weather casualty (especially hypothermia)

Dehydration

- Symptoms
  - dark urine
  - headache
  - dizziness, nausea
  - weakness
  - dry mouth, tongue, throat, lips
  - lack of appetite
  - stomach cramps or vomiting
  - irritability
  - decreased amount of urine being produced
  - mental sluggishness
  - increased or rapid heartbeat
  - lethargic
  - unconsciousness

Dehydration

- Treatment
  - drink water or other warm liquids
  - water should be sipped, not gulped
  - do not eat snow
  - rest
  - get medical treatment

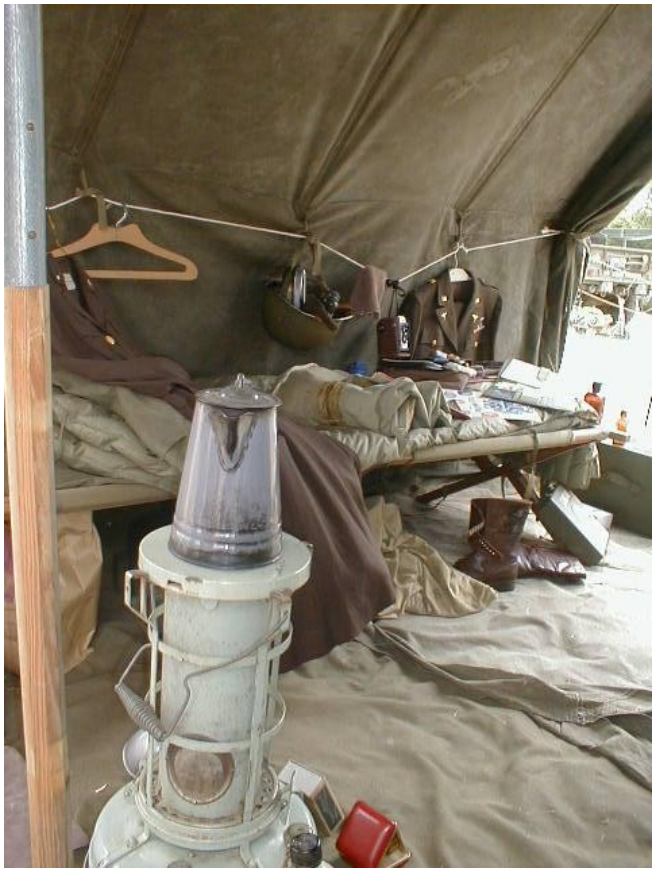
Dehydration

- Prevention
  - drink minimum of 3-6 quarts of fluid per day
  - monitor urine color
  - do not wait until you are thirsty
  - drink hot liquids for warmth

Carbon Monoxide Poisoning

- When oxygen in the body is replaced by carbon monoxide
  - colorless, odorless, tasteless gas resulting from incomplete combustion
- Inadequate ventilation from engines, stoves, heaters

Carbon Monoxide Poisoning



Carbon Monoxide Poisoning

- Symptoms
  - headache
  - dizziness
  - weakness
  - excessive yawning
  - ringing in ears
  - confusion
  - nausea
  - bright red lips, eyelids
  - grayish tint in dark-skinned people
  - drowsiness
  - unconsciousness
  - possibly death

Carbon Monoxide Poisoning

- Treatment
  - move to fresh air immediately
  - seek medical aid promptly
  - provide mouth-to-mouth resuscitation if victim is not breathing

Carbon Monoxide Poisoning

- Prevention
  - ensure proper ventilation
  - don’t use unvented heaters or engines
  - use only Army approved heaters in sleeping areas and ensure proper training and service
  - turn heaters off when not needed (during sleep)
  - if heater kept on during sleep, post a fire guard
  - never sleep in vehicle with engine running
  - never wrap poncho around vehicle exhaust to collect heat

Snow Blindness

- Inflammation and sensitivity of the eyes caused by ultraviolet rays of the sun reflected by the snow or ice

- Symptoms
  - gritty feeling in eyes
  - redness and tearing
  - eye movement will cause pain
  - headache

Snow Blindness

- Treatment
  - remove from sunlight
  - blindfold both eyes or cover with cool, wet bandages
  - seek medical attention
  - recovery may take 2-3 days
- Prevention
  - eye protection
    - dark, UV protective glasses
    - field expedient-cut narrow slits in MRE cardboard and tie around head
  - do not wait for discomfort to begin

Sunburn

- Burning of the skin due to overexposure to the sun and UV light
  - Contributing factors
    - fair skin, light hair
    - exposed skin
    - reflective qualities of the snow
    - high altitudes

- Symptoms
  - redness of skin, slight swelling (1st deg)
  - prolonged exposure (2nd deg)
    - pain and blistering
    - chills, fever, headache

Sunburn

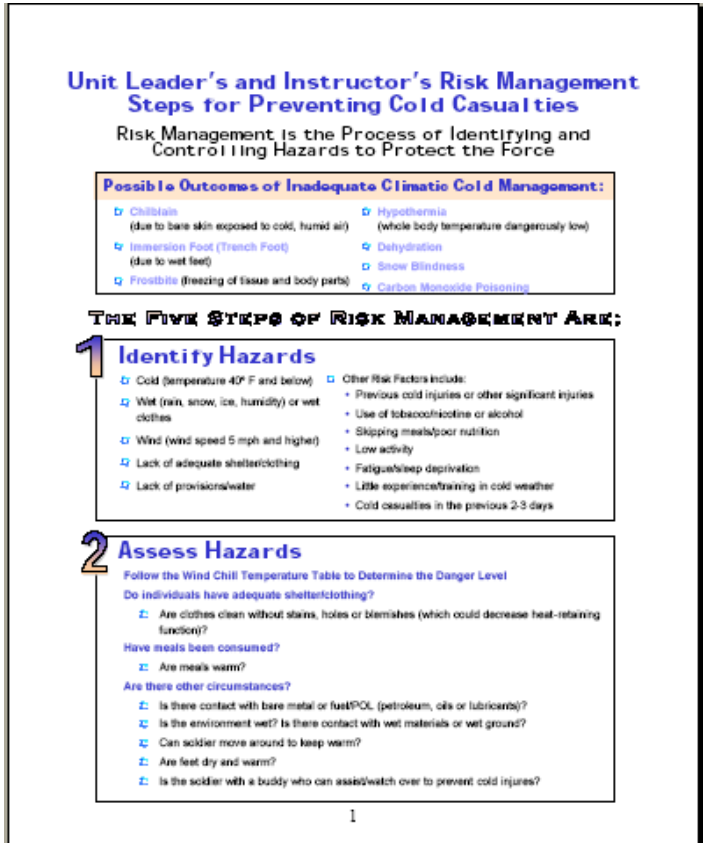
- Treatment
  - soothing skin creams in mild cases
  - in severe cases, seek medical attention
  - ibuprofen for pain
- Prevention
  - cover exposed skin with clothing
  - sunscreen, lip balm
  - limit exposure of skin to the environment

Cold Injury Prevention

Risk Management:

- Identify the hazards
- Assess the hazards
- Develop controls
- Implement controls
- Supervise and evaluate

- For detailed Cold Weather Risk Management Guide see http://usachppm.apgea.army.mil/coldinjury



Unit Leader's and Instructor's Risk Management Steps for Preventing Cold Casualties

Risk Management is the Process of Identifying and Controlling Hazards to Protect the Force

Possible Outcomes of Inadequate Climatic Cold Management:

- Chilblain (due to bare skin exposed to cold, humid air)
- Immersion Foot (Trench Foot) (due to wet feet)
- Frostbite (freezing of tissue and body parts)
- Hypothermia (whole body temperature dangerously low)
- Dehydration
- Snow Blindness
- Carbon Monoxide Poisoning

The Five Steps of Risk Management Are:

1 Identify Hazards

- Cold (temperature 40° F and below)
- Wet (rain, snow, ice, humidity) or wet clothes
- Wind (wind speed 5 mph and higher)
- Lack of adequate shelter/clothing
- Lack of provisions/water
- Other Risk Factors include:
  - Previous cold injuries or other significant injuries
  - Use of tobacco/nicotine or alcohol
  - Skipping meals/poor nutrition
  - Low activity
  - Fatigue/sleep deprivation
  - Little experience/training in cold weather
  - Cold casualties in the previous 2-3 days

2 Assess Hazards

Follow the Wind Chill Temperature Table to Determine the Danger Level

Do individuals have adequate shelter/clothing?

- Are clothes clean without stains, holes or blemishes (which could decrease heat-retaining function)?

Have meals been consumed?

- Are meals warm?

Are there other circumstances?

- Is there contact with bare metal or fuel/POL (petroleum, oils or lubricants)?
- Is the environment wet? Is there contact with wet materials or wet ground?
- Can soldier move around to keep warm?
- Are feet dry and warm?
- Is the soldier with a buddy who can assist/watch over to prevent cold injures?

1

Cold Injury Prevention

- Identify Hazard
  - Cold (temperature 40°F and below)
  - Wet (rain, snow, ice, humidity) or wet clothes
  - Wind (wind speed 5 miles per hour and higher)
  - Lack of adequate shelter/clothes
  - Lack of provisions/water

Cold Injury Prevention

- Assess Hazards
  - Be familiar with environmental conditions and the wind chill temperature table
  - Do individuals have adequate shelter/clothing
  - Have meals been consumed? Are meals warm?

Cold Injury Prevention

- Assess Hazards (continued)
  - Contact with wet materials or wet ground?
  - Can soldiers move around to keep warm?
  - Are feet dry and warm?
  - Is the soldier with a buddy who can assist/watch over to prevent cold casualties?

Wind Chill Temperature Table

Wind Speed (mph) ↓	Air Temperature (°F)																	
	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
0	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	25	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
				LITTLE DANGER				INCREASED DANGER						GREAT DANGER				

RISK OF FROSTBITE (see times on chart below)

GREEN	LITTLE DANGER (frostbite occurs in >2 hours in dry, exposed skin)
YELLOW	INCREASED DANGER (frostbite could occur in 45 minutes or less in dry, exposed skin)
RED	GREAT DANGER (frostbite could occur in 5 minutes or less in dry, exposed skin)

Wind Chill Temperature Table Guidance

Wind Chill Category

Work Intensity	Little Danger	Increased Danger	Great Danger
High **Digging foxhole, running, marching with rucksack, making or breaking bivouac**	Increased surveillance by small unit leaders; Black gloves optional - mandatory below 0ºF (-18ºC);	ECWCS or equivalent; Mittens with liners; No facial camouflage; Exposed skin covered and kept dry; Rest in warm, sheltered area; Vapor barrier boots below 0ºF (-18ºC) Provide warming facilities	Postpone non-essential training; Essential tasks only with <15 minute exposure; Work groups of no less than 2; Cover all exposed skin, Provide warming facilities
Low **Walking, marching without rucksack, drill and ceremony**	Increased surveillance; Cover exposed flesh when possible; Mittens with liner and no facial camouflage below 10ºF (-12ºC); Full head cover below 0ºF (-18ºC). Keep skin dry - especially around nose and mouth.	Restrict Non-essential training; 30-40 minute work cycles with frequent supervisory surveillance for essential tasks. See above.	Cancel Outdoor Training
Sedentary **Sentry duty, eating, resting, sleeping, clerical work**	See above; Full head cover and no facial camouflage below 10ºF (-12ºC); Cold-weather boots (VB) below 0ºF (-18ºC); Shorten duty cycles; Provide warming facilities	Postpone non-essential training; 15-20 minute work cycles for essential tasks; Work groups of no less than 2 personnel; No exposed skin	Cancel Outdoor Training

These guidelines are generalized for worldwide use. Commanders of units with extensive extreme cold-weather training and specialized equipment may opt to use less conservative guidelines.

Source: USARIEM Technical Note "SUSTAINING HEALTH & PERFORMANCE IN COLD WEATHER OPERATIONS," October 2001

Cold Injury Prevention

- Develop Controls
  - Educate soldiers of hazards and controls
  - Provide properly fitting clothing and footgear for cold weather
  - Provide adequate nutrition & hydration

Cold Injury Prevention

- Develop Controls (Cont.)
  - Schedule training to fit weather conditions
  - Keep moving to exercise big muscles
  - Protect feet, hands, face, ears, and eyes
  - Prevent carbon monoxide poisoning

Cold Injury Prevention

- Implement Controls
  - Identified controls are integrated into SOPs
  - Use buddy system to check clothes and personal protection
  - Discontinue or limit activities/exercise during extreme cold weather

Cold Injury Prevention

- Implement Controls (Cont.)
  - Have warming tents available (with fire guards)
  - Have warm food and drink on hand
  - Use only Army authorized heaters and ensure integrity of shelters, for maximum protection

Cold Injury Prevention

- Supervise & Evaluate
  - Monitor adequacy/progress of implementation of control measures
  - Do spot checks of clothes and personal protection
  - Evaluate current control measures and strategize new/more efficient ways to keep warm and avoid cold injuries

Cold Injury Prevention

“C.O.L.D.”

- C: Clean clothes
- O: Avoid Overheating
- L: Use Loose clothing in layers
- D: Keep it Dry

Conclusion

- Dress properly
- Drink plenty of fluids
- Eat right
- Don’t Smoke or drink Alcohol
- Keep in shape
- Get plenty of rest
- Minimize periods of inactivity
- Maintain a positive attitude
- Use heaters correctly
- Buddy System

Reference Materials

- Technical Note 02-2 *Sustaining Health and Performance In Cold Weather Operations*, US Army Research Institute of Environmental Medicine (USARIEM) *(October 2001)*
- TC 21-3 *Soldier's Handbook for Individual Operations and Survival in Cold-Weather Areas*
- FM 31-70 *Basic Cold Weather Manual*
- FM 21-10 *Field Hygiene and Sanitation*
- FM 21-11 *First Aid for Soldiers*
- Technical Note 93-4 *Medical Aspects of Cold Weather Operations: A Handbook for Medical Officers*, USARIEM
- TRADOC Regulation 350-29 (Prevention of Heat and Cold Casualties), July 2003
- TB Med 507 (Heat Stress Control and Heat Casualty Management), March 2003
- http://usachppm.apgea.army.mil/coldinjury/

QUESTIONS?